

SEQUENCE LISTING

<110> Fan, Hao
Wei, Zhong-Min

<120> HYPERSENSITIVE RESPONSE ELICITING DOMAINS AND USE
THEREOF

<130> 21829/81

<140>

<141>

<150> 60/212,211

<151> 2000-06-16

<160> 18

<170> PatentIn Ver. 2.1

<210> 1

<211> 338

<212> PRT

<213> *Erwinia chrysanthemi*

<400> 1

Met Gln Ile Thr Ile Lys Ala His Ile Gly Gly Asp Leu Gly Val Ser
1 5 10 15

Gly Leu Gly Ala Gln Gly Leu Lys Gly Leu Asn Ser Ala Ala Ser Ser
20 25 30

Leu Gly Ser Ser Val Asp Lys Leu Ser Ser Thr Ile Asp Lys Leu Thr
35 40 45

Ser Ala Leu Thr Ser Met Met Phe Gly Gly Ala Leu Ala Gln Gly Leu
50 55 60

Gly Ala Ser Ser Lys Gly Leu Gly Met Ser Asn Gln Leu Gly Gln Ser
65 70 75 80

Phe Gly Asn Gly Ala Gln Gly Ala Ser Asn Leu Leu Ser Val Pro Lys
85 90 95

Ser Gly Gly Asp Ala Leu Ser Lys Met Phe Asp Lys Ala Leu Asp Asp
100 105 110

Leu Leu Gly His Asp Thr Val Thr Lys Leu Thr Asn Gln Ser Asn Gln

09079248-061201

| | | | | |
|-----------------------------------------------------------------|---------------------------------------------|---------------------|--|-----|
| 115 | | 120 | | 125 |
| Leu Ala Asn Ser Met | Leu Asn Ala Ser Gln Met | Thr Gln Gly Asn Met | | |
| 130 | 135 | 140 | | |
| Asn Ala Phe Gly Ser | Gly Val Asn Asn Ala Leu Ser Ser Ile Leu Gly | | | |
| 145 | 150 | 155 | | 160 |
| Asn Gly Leu Gly Gln Ser Met Ser Gly Phe Ser | Gln Pro Ser Leu Gly | | | |
| | 165 | 170 | | 175 |
| Ala Gly Gly Leu Gln Gly Leu Ser Gly Ala Gly Ala Phe Asn Gln Leu | | | | |
| | 180 | 185 | | 190 |
| Gly Asn Ala Ile Gly Met Gly Val Gly Gln Asn Ala Ala Leu Ser Ala | | | | |
| | 195 | 200 | | 205 |
| Leu Ser Asn Val Ser Thr His Val Asp Gly Asn Asn Arg His Phe Val | | | | |
| | 210 | 215 | | 220 |
| Asp Lys Glu Asp Arg Gly Met Ala Lys Glu Ile Gly Gln Phe Met Asp | | | | |
| | 225 | 230 | | 235 |
| Gln Tyr Pro Glu Ile Phe Gly Lys Pro Glu Tyr Gln Lys Asp Gly Trp | | | | |
| | 245 | 250 | | 255 |
| Ser Ser Pro Lys Thr Asp Asp Lys Ser Trp Ala Lys Ala Leu Ser Lys | | | | |
| | 260 | 265 | | 270 |
| Pro Asp Asp Asp Gly Met Thr Gly Ala Ser Met Asp Lys Phe Arg Gln | | | | |
| | 275 | 280 | | 285 |
| Ala Met Gly Met Ile Lys Ser Ala Val Ala Gly Asp Thr Gly Asn Thr | | | | |
| | 290 | 295 | | 300 |
| Asn Leu Asn Leu Arg Gly Ala Gly Gly Ala Ser Leu Gly Ile Asp Ala | | | | |
| | 305 | 310 | | 315 |
| Ala Val Val Gly Asp Lys Ile Ala Asn Met Ser Leu Gly Lys Leu Ala | | | | |
| | 325 | 330 | | 335 |
| Asn Ala | | | | |

<210> 2
 <211> 2141
 <212> DNA

<213> *Erwinia chrysanthemi*

<400> 2

```

cgatttttacc cgggtgaacg tgctatgacc gacagcatca cggatttcga caccgttacg 60
gcgtttatgg ccgcgatgaa ccggcatcag gcggcgcgct ggtcgccgca atccggcgct 120
gatctggtat ttcagtttgg ggacaccggg cgtgaactca tgatgcagat tcagccgggg 180
cagcaatata ccggcatggt gcgcacgctg ctgcctcgtc gttatcagca ggccggcagag 240
tgcgatggct gccatctgtg cctgaacggc agcgatgtat tgatcctctg gtggccgctg 300
ccgtcggatc ccggcagtta tccgcagggtg atcgaacgtt tgtttgaact ggccgggaatg 360
acgttgccgt cgctatccat agcaccgacg gcgcgtccgc agacaggga cggacgcgcc 420
cgatcattaa gataaaggcg gcttttttta ttgcaaaacg gtaacggtga ggaaccgttt 480
caccgtcggc gtcactcagt aacaagtatc catcatgatg cctacatcgg gatcggcgctg 540
ggcatccgtt gcagatactt ttgcgaacac ctgacatgaa tgaggaaacg aaattatgca 600
aattacgatc aaagcgcaca tcggcggtga tttgggcgtc tccggtctgg ggctgggtgc 660
tcagggactg aaaggactga attccgcggc ttcacgctg ggttcacgagc tggataaact 720
gagcagcacc atcgataagt tgacctcgcg gctgacttcg atgatgtttg gcggcgcgct 780
ggcgcgaggg ctgggcgcga gctcgaaggg gctggggatg agcaatcaac tgggccagtc 840
tttcggcaat ggcgcgcgag gtgcgagcaa cctgctatcc gtaccgaaat ccggcggcga 900
tgcgttgtca aaaatgtttg ataaagcgct ggacgatctg ctgggtcatg acaccgtgac 960
caagctgact aaccagagca accaactggc taattcaatg ctgaacgcca gccagatgac 1020
ccagggtaat atgaatgcgt tcggcagcgg tgtgaacaac gcactgtcgt ccattctcgg 1080
caacggtctc ggccagtcga tgagtggctt ctctcagcct tctctggggg caggcggtt 1140
gcagggcctg agcggcgcgg gtgcattcaa ccagttgggt aatgccatcg gcattggcgt 1200
ggggcagaat gctgcgctga gtgcgttgag taacgtcagc acccacgtag acggttaacaa 1260
ccgccacttt gtagataaa gaaatattcg gtaaaccgga ataccagaaa gatggctgga gttcgccgaa 1320
tcagtatccg gaaatattcg gtaaaccgga ataccagaaa gatggctgga gttcgccgaa 1380
gacggacgac aaatcctggg ctaaagcgct gagtaaaccg gatgatgacg gtatgaccgg 1440
cgccagcatg gacaaattcc gtcaggcgat gggatgatc aaaagcgcgg tggcggtga 1500
taccggcaat accaacctga acctgcgtgg cgcgggcggt gcactcgtgg gtatcgatgc 1560
ggctgtcgtc ggcgataaaa tagccaacat gtcgctgggt aagctggcca acgcctgata 1620
atctgtgctg gcctgataaa gcggaacaga aaaaagagac ggggaagcct gtctcttttc 1680
ttattatgcy gtttatgcgg ttacctggac cggttaatca tcgtcatcga tctggtacaa 1740
acgcacattt tcccgttcat tcgcgtcgtt acgcgccaca atcgcgatgg catcttctc 1800
gtcgtcaga ttgcgcggct gatggggaac gccgggtgga atatagagaa actcgccggc 1860
cagatggaga cagctctgcy ataaatctgt gccgtaacgt gtttctatcc gcccttttag 1920
cagatagatt gcggtttcgt aatcaacatg gtaatgcggt tccgcctgtg cgccggccgg 1980
gatcaccaca atattcatag aaagctgtct tgcacctacc gtatcgcggg agataccgac 2040
aaaatagggc agtttttgcy tggatccgt ggggtgttcc ggcctgacaa tcttgagttg 2100
gttcgtcatc atctttctcc atctgggcga cctgatcggt t 2141

```

<210> 3

<211> 403

<212> PRT

<213> *Erwinia amylovora*

<400> 3

Met Ser Leu Asn Thr Ser Gly Leu Gly Ala Ser Thr Met Gln Ile Ser

09879248-06101

| | | | |
|-----------------------------------------------------------------|-----|-----|-----|
| 1 | 5 | 10 | 15 |
| Ile Gly Gly Ala Gly Gly Asn Asn Gly Leu Leu Gly Thr Ser Arg Gln | 20 | 25 | 30 |
| Asn Ala Gly Leu Gly Gly Asn Ser Ala Leu Gly Leu Gly Gly Gly Asn | 35 | 40 | 45 |
| Gln Asn Asp Thr Val Asn Gln Leu Ala Gly Leu Leu Thr Gly Met Met | 50 | 55 | 60 |
| Met Met Met Ser Met Met Gly Gly Gly Gly Leu Met Gly Gly Gly Leu | 65 | 70 | 75 |
| Gly Gly Gly Leu Gly Asn Gly Leu Gly Gly Ser Gly Gly Leu Gly Glu | 85 | 90 | 95 |
| Gly Leu Ser Asn Ala Leu Asn Asp Met Leu Gly Gly Ser Leu Asn Thr | 100 | 105 | 110 |
| Leu Gly Ser Lys Gly Gly Asn Asn Thr Thr Ser Thr Thr Asn Ser Pro | 115 | 120 | 125 |
| Leu Asp Gln Ala Leu Gly Ile Asn Ser Thr Ser Gln Asn Asp Asp Ser | 130 | 135 | 140 |
| Thr Ser Gly Thr Asp Ser Thr Ser Asp Ser Ser Asp Pro Met Gln Gln | 145 | 150 | 155 |
| Leu Leu Lys Met Phe Ser Glu Ile Met Gln Ser Leu Phe Gly Asp Gly | 165 | 170 | 175 |
| Gln Asp Gly Thr Gln Gly Ser Ser Ser Gly Gly Lys Gln Pro Thr Glu | 180 | 185 | 190 |
| Gly Glu Gln Asn Ala Tyr Lys Lys Gly Val Thr Asp Ala Leu Ser Gly | 195 | 200 | 205 |
| Leu Met Gly Asn Gly Leu Ser Gln Leu Leu Gly Asn Gly Gly Leu Gly | 210 | 215 | 220 |
| Gly Gly Gln Gly Gly Asn Ala Gly Thr Gly Leu Asp Gly Ser Ser Leu | 225 | 230 | 235 |
| Gly Gly Lys Gly Leu Gln Asn Leu Ser Gly Pro Val Asp Tyr Gln Gln | 245 | 250 | 255 |
| Leu Gly Asn Ala Val Gly Thr Gly Ile Gly Met Lys Ala Gly Ile Gln | | | |

| | | |
|-----------------------------------------------------------------|-----|-----|
| 260 | 265 | 270 |
| Ala Leu Asn Asp Ile Gly Thr His Arg His Ser Ser Thr Arg Ser Phe | | |
| 275 | 280 | 285 |
| Val Asn Lys Gly Asp Arg Ala Met Ala Lys Glu Ile Gly Gln Phe Met | | |
| 290 | 295 | 300 |
| Asp Gln Tyr Pro Glu Val Phe Gly Lys Pro Gln Tyr Gln Lys Gly Pro | | |
| 305 | 310 | 315 |
| Gly Gln Glu Val Lys Thr Asp Asp Lys Ser Trp Ala Lys Ala Leu Ser | | |
| 325 | 330 | 335 |
| Lys Pro Asp Asp Asp Gly Met Thr Pro Ala Ser Met Glu Gln Phe Asn | | |
| 340 | 345 | 350 |
| Lys Ala Lys Gly Met Ile Lys Arg Pro Met Ala Gly Asp Thr Gly Asn | | |
| 355 | 360 | 365 |
| Gly Asn Leu Gln Ala Arg Gly Ala Gly Gly Ser Ser Leu Gly Ile Asp | | |
| 370 | 375 | 380 |
| Ala Met Met Ala Gly Asp Ala Ile Asn Asn Met Ala Leu Gly Lys Leu | | |
| 385 | 390 | 395 |
| Gly Ala Ala | | |

<210> 4
 <211> 1288
 <212> DNA
 <213> Erwinia amylovora

<400> 4
 aagcttcggc atggcacggt tgaccgttgg gtcggcaggg tacgtttgaa ttattcataa 60
 gaggaatacg ttatgagtct gaatacaagt gggctgggag cgtcaacgat gcaaatttct 120
 atcggcgggtg cgggcgga aa taacgggttg ctgggtacca gtcgccagaa tgctgggttg 180
 ggtggcaatt ctgcactggg gctgggcggc ggtaaatcaaa atgataccgt caatcagctg 240
 gctggcttac tcaccggcat gatgatgatg atgagcatga tgggcgggtg tgggctgatg 300
 ggcggtggct taggcggttg cttaggtaat ggcttgggtg gctcaggttg cctgggcgaa 360
 ggactgtcga acgcgctgaa cgatatgtta ggcggttcgc tgaacacgct gggctcgaaa 420
 ggcggcaaca ataccacttc aacaacaaat tccccgctgg accaggcgct gggattataac 480
 tcaacgtccc aaaacgacga ttccacctcc ggcacagatt ccacctcaga ctccagcgac 540
 ccgatgcagc agctgctgaa gatgttcagc gagataatgc aaagcctgtt tggatgatggg 600
 caagatggca cccagggcag ttcctctggg ggcaagcagc cgaccgaagg cgagcagaac 660
 gcctataaaa aaggagtcac tgatgcgctg tcgggcctga tgggtaatgg tctgagccag 720

```
ctccttggca acgggggact gggaggtggt cagggcggtgta atgctggcac gggctcttgac 780
ggttcgtcgc tgggcggaac agggctgcaa aacctgagcg ggccggtgga ctaccagcag 840
ttaggtaacg ccgtgggtac cggatatcgg atgaaagcgg gcattcaggc gctgaatgat 900
atcgggtacg acaggcacag ttcaaccctg tctttcgtca ataaaggcga tggggcgatg 960
gcgaaggaaa tgggtcagtt catggaccag tatcctgagg tgtttggcaa gccgcagtac 1020
cagaaaggcc cgggtcagga ggtgaaaacc gatgacaaat catgggcaaa agcactgagc 1080
aagccagatg acgacggaat gacaccagcc agtatggagc agttcaacaa agccaagggc 1140
atgatcaaaa ggcccatggc gggtgatacc ggcaacggca acctgcaggc acgcggtgcc 1200
ggtggttctt cgctgggtat tgatgccatg atggccggtg atgccattaa caatatggca 1260
cttggcaagc tgggcgcggc ttaagctt 1288
```

<210> 5

<211> 1344

<212> DNA

<213> *Erwinia amylovora*

<400> 5

```
atgtcaattc ttacgcttaa caacaatacc tcgtcctcgc cgggtctggt ccagtccggg 60
ggggacaacg ggcttggtgg tcataatgca aattctgcgt tggggcaaca acccatcgat 120
cggcaaacca ttgagcaaat ggctcaatta ttggcggaac tgtaaagtc actgctatcg 180
ccacaatcag gtaatgcggc aaccggagcc ggtggcaatg accagactac aggagttggt 240
aacgctggcg gcctgaacgg acgaaaaggc acagcaggaa cactccgca gtctgacagt 300
cagaacatgc tgagtgaatg gggcaacaac gggctggatc aggccatcac gcccgatggc 360
cagggcgggc ggcagatcgg cgataatcct ttactgaaag ccatgctgaa gcttattgca 420
cgcagatgag acggccaaag cgatcagttt ggccaacctg gtacgggcaa caacagtgcc 480
tcttcgggta cttcttcacg tggcggttcc ccttttaacg atctatcagg ggggaaggcc 540
ccttcgggca actcccttc cggcaactac tctcccgta gtaccttct accccatcc 600
acgccaacgt cccctacctc accgcttgat ttcccttctt ctcccacaa agcagccggg 660
ggcagcacgc cggtaaccga tcatcctgac cctgttggtg gcgcgggcat cggggccgga 720
aattcggtgg ccttcaccag cgccggcgct aatcagacgg tgctgcatga caccattacc 780
gtgaaagcgg gtcaggtggt tgatggcaaa ggacaaacct tcaccgccgg ttcagaatta 840
ggcgatggcg gccagtctga aaaccagaaa ccgctgttta tactggaaga cggtgccagc 900
ctgaaaaacg tcaccatggg cgacgacggg gcggatggta ttcattctta cggtgatgcc 960
aaaatagaca atctgcacgt caccaacgtg ggtgaggacg cgattaccgt taagccaaac 1020
agcgcgggca aaaaatccca cgttgaaatc actaacagtt ccttcgagca cgcctctgac 1080
aagatcctgc agctgaatgc cgataactaa ctgagcggtg acaacgtgaa ggccaaagac 1140
tttggtactt ttgtacgcac taacggcggt caacagggta actgggatct gaatctgagc 1200
catatcagcg cagaagacgg taagttctcg ttcggttaaaa gcgatagcga ggggctaaac 1260
gtcaatacca gtgatatctc actgggtgat gttgaaaacc actacaaagt gccgatgtcc 1320
gccaacctga aggtggctga atga 1344
```

<210> 6

<211> 447

<212> PRT

<213> *Erwinia amylovora*

<400> 6

Met Ser Ile Leu Thr Leu Asn Asn Asn Thr Ser Ser Ser Pro Gly Leu
1 5 10 15

Phe Gln Ser Gly Gly Asp Asn Gly Leu Gly Gly His Asn Ala Asn Ser
20 25 30

Ala Leu Gly Gln Gln Pro Ile Asp Arg Gln Thr Ile Glu Gln Met Ala
35 40 45

Gln Leu Leu Ala Glu Leu Leu Lys Ser Leu Leu Ser Pro Gln Ser Gly
50 55 60

Asn Ala Ala Thr Gly Ala Gly Gly Asn Asp Gln Thr Thr Gly Val Gly
65 70 75 80

Asn Ala Gly Gly Leu Asn Gly Arg Lys Gly Thr Ala Gly Thr Thr Pro
85 90 95

Gln Ser Asp Ser Gln Asn Met Leu Ser Glu Met Gly Asn Asn Gly Leu
100 105 110

Asp Gln Ala Ile Thr Pro Asp Gly Gln Gly Gly Gly Gln Ile Gly Asp
115 120 125

Asn Pro Leu Leu Lys Ala Met Leu Lys Leu Ile Ala Arg Met Met Asp
130 135 140

Gly Gln Ser Asp Gln Phe Gly Gln Pro Gly Thr Gly Asn Asn Ser Ala
145 150 155 160

Ser Ser Gly Thr Ser Ser Ser Gly Gly Ser Pro Phe Asn Asp Leu Ser
165 170 175

Gly Gly Lys Ala Pro Ser Gly Asn Ser Pro Ser Gly Asn Tyr Ser Pro
180 185 190

Val Ser Thr Phe Ser Pro Pro Ser Thr Pro Thr Ser Pro Thr Ser Pro
195 200 205

Leu Asp Phe Pro Ser Ser Pro Thr Lys Ala Ala Gly Gly Ser Thr Pro
210 215 220

Val Thr Asp His Pro Asp Pro Val Gly Ser Ala Gly Ile Gly Ala Gly
225 230 235 240

Asn Ser Val Ala Phe Thr Ser Ala Gly Ala Asn Gln Thr Val Leu His
245 250 255

Asp Thr Ile Thr Val Lys Ala Gly Gln Val Phe Asp Gly Lys Gly Gln
260 265 270

Thr Phe Thr Ala Gly Ser Glu Leu Gly Asp Gly Gly Gln Ser Glu Asn
275 280 285

Gln Lys Pro Leu Phe Ile Leu Glu Asp Gly Ala Ser Leu Lys Asn Val
290 295 300

Thr Met Gly Asp Asp Gly Ala Asp Gly Ile His Leu Tyr Gly Asp Ala
305 310 315 320

Lys Ile Asp Asn Leu His Val Thr Asn Val Gly Glu Asp Ala Ile Thr
325 330 335

Val Lys Pro Asn Ser Ala Gly Lys Lys Ser His Val Glu Ile Thr Asn
340 345 350

Ser Ser Phe Glu His Ala Ser Asp Lys Ile Leu Gln Leu Asn Ala Asp
355 360 365

Thr Asn Leu Ser Val Asp Asn Val Lys Ala Lys Asp Phe Gly Thr Phe
370 375 380

Val Arg Thr Asn Gly Gly Gln Gln Gly Asn Trp Asp Leu Asn Leu Ser
385 390 395 400

His Ile Ser Ala Glu Asp Gly Lys Phe Ser Phe Val Lys Ser Asp Ser
405 410 415

Glu Gly Leu Asn Val Asn Thr Ser Asp Ile Ser Leu Gly Asp Val Glu
420 425 430

Asn His Tyr Lys Val Pro Met Ser Ala Asn Leu Lys Val Ala Glu
435 440 445

<210> 7

<211> 5517

<212> DNA

<213> Erwinia amylovora

<400> 7

atggaattaa aatcactggg aactgaacac aaggcggcag tacacacagc ggcgcacaaac 60
cctgtggggc atggtgttgc cttacagcag ggcagcagca gcagcagccc gcaaaatgcc 120
gctgcatcat tggcggcaga aggcaaaaat cgtgggaaaa tgccgagaat tcaccagcca 180
tctactgcgg ctgatggtat cagcgtgtgt caccagcaaaa agaaatcctt cagtctcagg 240

| | | | | | | |
|-------------|-------------|-------------|------------|-------------|------------|------|
| ggctgttttg | ggacgaaaaa | atthttccaga | tcggcaccgc | agggccagcc | aggtaccacc | 300 |
| cacagcaaaag | gggcaacatt | gcgcgatctg | ctggcgcggg | acgacggcga | aacgcagcat | 360 |
| gaggcgggccg | cgccagatgc | ggcgcgtttg | acccgttcgg | gcggcggtcaa | acgccgcaat | 420 |
| atggacgaca | tggccggggc | gccaatggtg | aaaggtggca | gcggcgaaga | taaggtacca | 480 |
| acgcagcaaaa | aacggcatca | gctgaacaat | tttggccaga | tgcgccaaac | gatgttgagc | 540 |
| aaaatggctc | acccggcttc | agccaacgcc | ggcgatcgcc | tgagcattc | accgccgcac | 600 |
| atcccggtta | gccaccacga | aatcaaggaa | gaaccggttg | gctccaccag | caaggcaaca | 660 |
| acggccccacg | cagacagagt | ggaaatcgct | caggaagatg | acgacagcga | attccagcaa | 720 |
| ctgcatcaac | agcggctggc | gcgcgaacgg | gaaaatccac | cgagccggcc | caaactcggc | 780 |
| gttgccacac | cgattagcgc | caggtttcag | cccaaactga | ctgcggttgc | ggaaagcgtc | 840 |
| cttgaggggga | cagataccac | gcagtcaccc | cttaagccgc | aatcaatgct | gaaaggaagt | 900 |
| ggagccggggg | taacgccgct | ggcggttaacg | ctggataaag | gcaagttgca | gctggcaccg | 960 |
| gataatccac | ccgcgctcaa | tacgttggtg | aagcagacat | tgggtaaaga | caccagcac | 1020 |
| tatctggcgc | accatgccag | cagcgacggg | agccagcatc | tgctgctgga | caacaaaggc | 1080 |
| cacctgtttg | atatcaaaaag | caccgccacc | agctatagcg | tgctgcacaa | cagccacccc | 1140 |
| ggtgagataa | agggcaagct | ggcgcgaggc | ggtactggct | ccgtcagcgt | agacggtaaa | 1200 |
| agcggcaaga | tctcgctggg | gagcggtagc | caaagtcaca | acaaaacaat | gctaagccaa | 1260 |
| ccgggggaag | cgcaccgttc | cttattaacc | ggcatttggc | agcatcctgc | tggcgagcgc | 1320 |
| cggccgcagg | gcgagtcaat | ccgcctgcat | gacgacaaaa | ttcatatcct | gcatccggag | 1380 |
| ctgggcgtat | ggcaatctgc | ggataaagat | acccacagcc | agctgtctcg | ccaggcagac | 1440 |
| ggtaagctct | atgcgctgaa | agacaaccgt | accctgcaaa | acctctccga | taataaatcc | 1500 |
| tcagaaaagc | tggctgataa | aatcaaatcg | tattccgttg | atcagcgggg | gcaggtggcg | 1560 |
| atcctgacgg | atactcccg | ccgccataag | atgagtatta | tgccctcgct | ggatgcttcc | 1620 |
| ccggagagcc | atatttccct | cagcctgcat | tttgccgatg | cccaccagg | gttattgcac | 1680 |
| gggaagtcgg | agcttgaggc | acaatctgtc | gcgatcagcc | atgggcgact | ggttggtggc | 1740 |
| gatagcgaag | gcaagctgtt | tagcgccgcc | attccgaagc | aaggggatgg | aaacgaactg | 1800 |
| aaaatgaaag | ccatgcctca | gcatgcgtc | gatgaacatt | ttggtcatga | ccaccagatt | 1860 |
| tctggatttt | tccatgacga | ccacggccag | cttaatgcgc | tggtgaaaaa | taacttcagg | 1920 |
| cagcagcatg | cctgcccgtt | gggtaacgat | catcagtttc | accccggttg | gaacctgact | 1980 |
| gatgcgctgg | ttatcgacaa | tcagctgggg | ctgcatcata | ccaatcctga | accgcatgag | 2040 |
| attcttgata | tggggcattt | aggcagcctg | gcgttacagg | agggcaagct | tcactatttt | 2100 |
| gaccagctga | ccaaagggtg | gactggcgcg | gagtcagatt | gtaagcagct | gaaaaaaggc | 2160 |
| ctggatggag | cagcttatct | actgaaagac | ggtgaagtga | aacgcctgaa | tattaatcag | 2220 |
| agcacctcct | ctatcaagca | cggaaacggaa | aacgtttttt | cgctgccgca | tgtgcgcaat | 2280 |
| aaaccggagc | cgggagatgc | cctgcaagg | ctgaataaag | acgataaggc | ccaggccatg | 2340 |
| gcggtgattg | gggtaaataa | atacctggcg | ctgacggaaa | aaggggacat | tcgctccttc | 2400 |
| cagataaaac | ccggcaccca | gcagttggag | cggccggcac | aaactctcag | ccgcgaaggt | 2460 |
| atcagcggcg | aactgaaaga | cattcatgtc | gaccacaagc | agaacctgta | tgcttgacc | 2520 |
| cacgagggag | aggtgtttca | tcagccgcgt | gaagcctggc | agaatggtgc | cgaaagcagc | 2580 |
| agctggcaca | aactggcggt | gccacagagt | gaaagtaagc | taaaaagtct | ggacatgagc | 2640 |
| catgagcaca | aaccgattgc | cacctttgaa | gacggtagcc | agcatcagct | gaaggctggc | 2700 |
| ggctggcacg | cctatgcggc | acctgaacgc | gggccgctgg | cggtgggtac | cagcggttca | 2760 |
| caaaccgtct | ttaaccgact | aatgcagggg | gtgaaaggca | aggtgatccc | aggcagcggg | 2820 |
| ttgacggtta | agctctcggc | tcagacgggg | ggaatgaccg | gcgccgaagg | gcgcaaggtc | 2880 |
| agcagtaaat | tttccgaaag | gatccgcgcc | tatgcgttca | acccaacaat | gtccacgcgc | 2940 |
| cgaccgatta | aaaatgctgc | ttatgccaca | cagcacggct | ggcagggggc | tgaggggttg | 3000 |
| aagccgttgt | acgagatgca | gggagcgctg | attaaacaac | tggatgcgca | taacgttcgt | 3060 |
| cataacgcgc | cacagccaga | tttgagagc | aaactggaaa | ctctggattt | aggcgaacat | 3120 |

```

ggcgcagaat tgcttaacga catgaagcgc ttccgcgacg aactggagca gagtgcgaacc 3180
cgttcgggtga ccgttttagg tcaacatcag ggagtgctaa aaagcaacgg tgaaatcaat 3240
agcgaattta agccatcgcc cggcaaggcg ttggtccaga gctttaacgt caatcgctct 3300
ggtcaggatc taagcaagtc actgcaacag gcagtacatg ccacgccgcc atccgcagag 3360
agtaaaactgc aatccatgct ggggcacttt gtcagtgcg ggggtggatat gagtcatcag 3420
aagggcgaga tcccgctggg ccgccagcgc gatccgaatg ataaaaccgc actgaccaa 3480
tcgcgtttta ttttagatac cgtgaccatc ggtgaactgc atgaactggc cgataaggcg 3540
aaactggtat ctgaccataa acccgatgcc gatcagataa aacagctgcg ccagcagttc 3600
gatacgtctg gtgaaaagcg gtatgagagc aatccggtga agcattacac cgatatgggc 3660
ttcacccata ataaggcgct ggaagcaaac tatgatgcgg tcaaagcctt tatcaatgcc 3720
tttaagaaaag agcaccacgg cgtcaatctg accacgcgta ccgtactgga atcacagggc 3780
agtgcggagc tggcgaagaa gctcaagaat acgctgttgt ccctggacag tggtgaaagt 3840
atgagcttca gccggtcata tggcgggggc gtcagcactg tctttgtgcc tacccttagc 3900
aagaagggtg cagttccggt gatccccgga gccggcatca cgctggatcg cgcctataac 3960
ctgagcttca gtcgtaccag cggcgggattg aacgtcagtt ttggccgcga cggcgggggtg 4020
agtggtaaca tcatggctgc taccggccat gatgtgatgc cctatatgac cggtaagaaa 4080
accagtgcag gtaacgccag tgactggttg agcgcaaaac ataaaatcag cccggacttg 4140
cgtatcggcg ctgctgtgag tggcaccctg caaggaacgc taaaaacag cctgaagttt 4200
aagctgacag aggatgagct gcctggcttt atccatggct tgacgcatgg cacgttgacc 4260
ccggcagaac tggtgcaaaa ggggatcgaa catcagatga agcagggcag caaactgacg 4320
tttagcgtcg atacctcggc aaatctggat ctgcgtgccg gtatcaatct gaacgaagac 4380
ggcagtaaac caaatggtgt cactgcccggt gtttctgccg ggctaagtgc atcggaac 4440
ctggccgccg gtcgcgtga acgcagcacc acctctggcc agtttggcag cacgacttcg 4500
gccagcaata accgcccaac cttcctcaac ggggtcggcg cgggtgctaa cctgacggct 4560
gcttttagggg ttgcccattc atctacgcag gaagggaaac cggtcgggat cttcccgga 4620
tttacctcga ccaatgtttc ggcagcgtcg gcgctggata accgtacctc acagagtatc 4680
agcctggaat tgaagcgcgc ggagccggtg accagcaacg atatcagcga gttgacctcc 4740
acgctgggaa aacactttta ggatagcgcc acaacgaaga tgcttgccgc tctcaaagag 4800
ttagatgacg ctaagcccg ctaacaactg catattttac agcagcattt cagtgcacaa 4860
gatgtcgtcg gtgatgaacg ctacgaggcg gtgcgcaacc tgaaaaaact ggtgatacgt 4920
caacaggctg cggacagcca cagcatggaa ttaggatctg ccagtcacag cacgacctac 4980
aataatctgt cgagaataaa taatgacggc attgtcgagc tgctacacaa acatttcgat 5040
gcggcattac cagcaagcag tgccaaacgt cttggtgaaa tgatgaataa cgatccggca 5100
ctgaaagata ttattaagca gctgcaaagt acgccgttca gcagcgccag cgtgtcgatg 5160
gagctgaaaag atggtctgcg tgagcagacg gaaaaagcaa tactggacgg taaggtcgg 5220
cgtgaagaag tgggagtact tttccaggat cgtaacaact tgctgtttaa atcggtcagc 5280
gtcagtcagt ccgtcagcaa aagcgaaggc ttcaataccc cagcgtgtt actggggacg 5340
agcaacagcg ctgctatgag catggagcgc aacatcgga cattaattt taaatacggc 5400
caggatcaga acacccacg gcgatttacc ctggaggggtg gaatagctca ggctaatecg 5460
caggtcgcat ctgcgcttac tgatttgaag aaggaagggc tggaatgaa gagctaa 5517

```

<210> 8
 <211> 1838
 <212> PRT
 <213> *Erwinia amylovora*

<400> 8

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Glu | Leu | Lys | Ser | Leu | Gly | Thr | Glu | His | Lys | Ala | Ala | Val | His | Thr | 1 | 5 | 10 | 15 |
| Ala | Ala | His | Asn | Pro | Val | Gly | His | Gly | Val | Ala | Leu | Gln | Gln | Gly | Ser | 20 | 25 | 30 | |
| Ser | Ser | Ser | Ser | Pro | Gln | Asn | Ala | Ala | Ala | Ser | Leu | Ala | Ala | Glu | Gly | 35 | 40 | 45 | |
| Lys | Asn | Arg | Gly | Lys | Met | Pro | Arg | Ile | His | Gln | Pro | Ser | Thr | Ala | Ala | 50 | 55 | 60 | |
| Asp | Gly | Ile | Ser | Ala | Ala | His | Gln | Gln | Lys | Lys | Ser | Phe | Ser | Leu | Arg | 65 | 70 | 75 | 80 |
| Gly | Cys | Leu | Gly | Thr | Lys | Lys | Phe | Ser | Arg | Ser | Ala | Pro | Gln | Gly | Gln | 85 | 90 | 95 | |
| Pro | Gly | Thr | Thr | His | Ser | Lys | Gly | Ala | Thr | Leu | Arg | Asp | Leu | Leu | Ala | 100 | 105 | 110 | |
| Arg | Asp | Asp | Gly | Glu | Thr | Gln | His | Glu | Ala | Ala | Ala | Pro | Asp | Ala | Ala | 115 | 120 | 125 | |
| Arg | Leu | Thr | Arg | Ser | Gly | Gly | Val | Lys | Arg | Arg | Asn | Met | Asp | Asp | Met | 130 | 135 | 140 | |
| Ala | Gly | Arg | Pro | Met | Val | Lys | Gly | Gly | Ser | Gly | Glu | Asp | Lys | Val | Pro | 145 | 150 | 155 | 160 |
| Thr | Gln | Gln | Lys | Arg | His | Gln | Leu | Asn | Asn | Phe | Gly | Gln | Met | Arg | Gln | 165 | 170 | 175 | |
| Thr | Met | Leu | Ser | Lys | Met | Ala | His | Pro | Ala | Ser | Ala | Asn | Ala | Gly | Asp | 180 | 185 | 190 | |
| Arg | Leu | Gln | His | Ser | Pro | Pro | His | Ile | Pro | Gly | Ser | His | His | Glu | Ile | 195 | 200 | 205 | |
| Lys | Glu | Glu | Pro | Val | Gly | Ser | Thr | Ser | Lys | Ala | Thr | Thr | Ala | His | Ala | 210 | 215 | 220 | |
| Asp | Arg | Val | Glu | Ile | Ala | Gln | Glu | Asp | Asp | Asp | Ser | Glu | Phe | Gln | Gln | 225 | 230 | 235 | 240 |
| Leu | His | Gln | Gln | Arg | Leu | Ala | Arg | Glu | Arg | Glu | Asn | Pro | Pro | Gln | Pro | 245 | 250 | 255 | |

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Pro | Lys | Leu | Gly | Val | Ala | Thr | Pro | Ile | Ser | Ala | Arg | Phe | Gln | Pro | Lys | 260 | 265 | 270 |
| Leu | Thr | Ala | Val | Ala | Glu | Ser | Val | Leu | Glu | Gly | Thr | Asp | Thr | Thr | Gln | 275 | 280 | 285 |
| Ser | Pro | Leu | Lys | Pro | Gln | Ser | Met | Leu | Lys | Gly | Ser | Gly | Ala | Gly | Val | 290 | 295 | 300 |
| Thr | Pro | Leu | Ala | Val | Thr | Leu | Asp | Lys | Gly | Lys | Leu | Gln | Leu | Ala | Pro | 305 | 310 | 315 |
| Asp | Asn | Pro | Pro | Ala | Leu | Asn | Thr | Leu | Leu | Lys | Gln | Thr | Leu | Gly | Lys | 325 | 330 | 335 |
| Asp | Thr | Gln | His | Tyr | Leu | Ala | His | His | Ala | Ser | Ser | Asp | Gly | Ser | Gln | 340 | 345 | 350 |
| His | Leu | Leu | Leu | Asp | Asn | Lys | Gly | His | Leu | Phe | Asp | Ile | Lys | Ser | Thr | 355 | 360 | 365 |
| Ala | Thr | Ser | Tyr | Ser | Val | Leu | His | Asn | Ser | His | Pro | Gly | Glu | Ile | Lys | 370 | 375 | 380 |
| Gly | Lys | Leu | Ala | Gln | Ala | Gly | Thr | Gly | Ser | Val | Ser | Val | Asp | Gly | Lys | 385 | 390 | 395 |
| Ser | Gly | Lys | Ile | Ser | Leu | Gly | Ser | Gly | Thr | Gln | Ser | His | Asn | Lys | Thr | 405 | 410 | 415 |
| Met | Leu | Ser | Gln | Pro | Gly | Glu | Ala | His | Arg | Ser | Leu | Leu | Thr | Gly | Ile | 420 | 425 | 430 |
| Trp | Gln | His | Pro | Ala | Gly | Ala | Ala | Arg | Pro | Gln | Gly | Glu | Ser | Ile | Arg | 435 | 440 | 445 |
| Leu | His | Asp | Asp | Lys | Ile | His | Ile | Leu | His | Pro | Glu | Leu | Gly | Val | Trp | 450 | 455 | 460 |
| Gln | Ser | Ala | Asp | Lys | Asp | Thr | His | Ser | Gln | Leu | Ser | Arg | Gln | Ala | Asp | 465 | 470 | 475 |
| Gly | Lys | Leu | Tyr | Ala | Leu | Lys | Asp | Asn | Arg | Thr | Leu | Gln | Asn | Leu | Ser | 485 | 490 | 495 |
| Asp | Asn | Lys | Ser | Ser | Glu | Lys | Leu | Val | Asp | Lys | Ile | Lys | Ser | Tyr | Ser | 500 | 505 | 510 |

Val Asp Gln Arg Gly Gln Val Ala Ile Leu Thr Asp Thr Pro Gly Arg
 515 520 525
 His Lys Met Ser Ile Met Pro Ser Leu Asp Ala Ser Pro Glu Ser His
 530 535 540
 Ile Ser Leu Ser Leu His Phe Ala Asp Ala His Gln Gly Leu Leu His
 545 550 555 560
 Gly Lys Ser Glu Leu Glu Ala Gln Ser Val Ala Ile Ser His Gly Arg
 565 570 575
 Leu Val Val Ala Asp Ser Glu Gly Lys Leu Phe Ser Ala Ala Ile Pro
 580 585 590
 Lys Gln Gly Asp Gly Asn Glu Leu Lys Met Lys Ala Met Pro Gln His
 595 600 605
 Ala Leu Asp Glu His Phe Gly His Asp His Gln Ile Ser Gly Phe Phe
 610 615 620
 His Asp Asp His Gly Gln Leu Asn Ala Leu Val Lys Asn Asn Phe Arg
 625 630 635 640
 Gln Gln His Ala Cys Pro Leu Gly Asn Asp His Gln Phe His Pro Gly
 645 650 655
 Trp Asn Leu Thr Asp Ala Leu Val Ile Asp Asn Gln Leu Gly Leu His
 660 665 670
 His Thr Asn Pro Glu Pro His Glu Ile Leu Asp Met Gly His Leu Gly
 675 680 685
 Ser Leu Ala Leu Gln Glu Gly Lys Leu His Tyr Phe Asp Gln Leu Thr
 690 695 700
 Lys Gly Trp Thr Gly Ala Glu Ser Asp Cys Lys Gln Leu Lys Lys Gly
 705 710 715 720
 Leu Asp Gly Ala Ala Tyr Leu Leu Lys Asp Gly Glu Val Lys Arg Leu
 725 730 735
 Asn Ile Asn Gln Ser Thr Ser Ser Ile Lys His Gly Thr Glu Asn Val
 740 745 750
 Phe Ser Leu Pro His Val Arg Asn Lys Pro Glu Pro Gly Asp Ala Leu
 755 760 765

| | | | | | | | | | | | | | | | | |
|-----|------|-----|-----|-----|-----|------|------|-----|-----|-----|------|------|-----|-----|-----|--|
| Gln | Gly | Leu | Asn | Lys | Asp | Asp | Lys | Ala | Gln | Ala | Met | Ala | Val | Ile | Gly | |
| 770 | | | | | | 775 | | | | | 780 | | | | | |
| Val | Asn | Lys | Tyr | Leu | Ala | Leu | Thr | Glu | Lys | Gly | Asp | Ile | Arg | Ser | Phe | |
| 785 | | | | | 790 | | | | | 795 | | | | | 800 | |
| Gln | Ile | Lys | Pro | Gly | Thr | Gln | Gln | Leu | Glu | Arg | Pro | Ala | Gln | Thr | Leu | |
| | | | | 805 | | | | | 810 | | | | | 815 | | |
| Ser | Arg | Glu | Gly | Ile | Ser | Gly | Glu | Leu | Lys | Asp | Ile | His | Val | Asp | His | |
| | | | 820 | | | | | 825 | | | | | 830 | | | |
| Lys | Gln | Asn | Leu | Tyr | Ala | Leu | Thr | His | Glu | Gly | Glu | Val | Phe | His | Gln | |
| | | 835 | | | | | 840 | | | | | 845 | | | | |
| Pro | Arg | Glu | Ala | Trp | Gln | Asn | Gly | Ala | Glu | Ser | Ser | Ser | Trp | His | Lys | |
| | | 850 | | | | 855 | | | | | 860 | | | | | |
| Leu | Ala | Leu | Pro | Gln | Ser | Glu | Ser | Lys | Leu | Lys | Ser | Leu | Asp | Met | Ser | |
| 865 | | | | | 870 | | | | | 875 | | | | | 880 | |
| His | Glu | His | Lys | Pro | Ile | Ala | Thr | Phe | Glu | Asp | Gly | Ser | Gln | His | Gln | |
| | | | | 885 | | | | | 890 | | | | | 895 | | |
| Leu | Lys | Ala | Gly | Gly | Trp | His | Ala | Tyr | Ala | Ala | Pro | Glu | Arg | Gly | Pro | |
| | | | 900 | | | | | 905 | | | | | | 910 | | |
| Leu | Ala | Val | Gly | Thr | Ser | Gly | Ser | Gln | Thr | Val | Phe | Asn | Arg | Leu | Met | |
| | | 915 | | | | | 920 | | | | | 925 | | | | |
| Gln | Gly | Val | Lys | Gly | Lys | Val | Ile | Pro | Gly | Ser | Gly | Leu | Thr | Val | Lys | |
| | 930 | | | | | 935 | | | | | 940 | | | | | |
| Leu | Ser | Ala | Gln | Thr | Gly | Gly | Met | Thr | Gly | Ala | Glu | Gly | Arg | Lys | Val | |
| 945 | | | | | 950 | | | | | 955 | | | | | 960 | |
| Ser | Ser | Lys | Phe | Ser | Glu | Arg | Ile | Arg | Ala | Tyr | Ala | Phe | Asn | Pro | Thr | |
| | | | | 965 | | | | | 970 | | | | | 975 | | |
| Met | Ser | Thr | Pro | Arg | Pro | Ile | Lys | Asn | Ala | Ala | Tyr | Ala | Thr | Gln | His | |
| | | | 980 | | | | | 985 | | | | | 990 | | | |
| Gly | Trp | Gln | Gly | Arg | Glu | Gly | Leu | Lys | Pro | Leu | Tyr | Glu | Met | Gln | Gly | |
| | | 995 | | | | | 1000 | | | | | 1005 | | | | |
| Ala | Leu | Ile | Lys | Gln | Leu | Asp | Ala | His | Asn | Val | Arg | His | Asn | Ala | Pro | |
| | 1010 | | | | | 1015 | | | | | 1020 | | | | | |

Gln Pro Asp Leu Gln Ser Lys Leu Glu Thr Leu Asp Leu Gly Glu His
 1025 1030 1035 1040
 Gly Ala Glu Leu Leu Asn Asp Met Lys Arg Phe Arg Asp Glu Leu Glu
 1045 1050 1055
 Gln Ser Ala Thr Arg Ser Val Thr Val Leu Gly Gln His Gln Gly Val
 1060 1065 1070
 Leu Lys Ser Asn Gly Glu Ile Asn Ser Glu Phe Lys Pro Ser Pro Gly
 1075 1080 1085
 Lys Ala Leu Val Gln Ser Phe Asn Val Asn Arg Ser Gly Gln Asp Leu
 1090 1095 1100
 Ser Lys Ser Leu Gln Gln Ala Val His Ala Thr Pro Pro Ser Ala Glu
 1105 1110 1115 1120
 Ser Lys Leu Gln Ser Met Leu Gly His Phe Val Ser Ala Gly Val Asp
 1125 1130 1135
 Met Ser His Gln Lys Gly Glu Ile Pro Leu Gly Arg Gln Arg Asp Pro
 1140 1145 1150
 Asn Asp Lys Thr Ala Leu Thr Lys Ser Arg Leu Ile Leu Asp Thr Val
 1155 1160 1165
 Thr Ile Gly Glu Leu His Glu Leu Ala Asp Lys Ala Lys Leu Val Ser
 1170 1175 1180
 Asp His Lys Pro Asp Ala Asp Gln Ile Lys Gln Leu Arg Gln Gln Phe
 1185 1190 1195 1200
 Asp Thr Leu Arg Glu Lys Arg Tyr Glu Ser Asn Pro Val Lys His Tyr
 1205 1210 1215
 Thr Asp Met Gly Phe Thr His Asn Lys Ala Leu Glu Ala Asn Tyr Asp
 1220 1225 1230
 Ala Val Lys Ala Phe Ile Asn Ala Phe Lys Lys Glu His His Gly Val
 1235 1240 1245
 Asn Leu Thr Thr Arg Thr Val Leu Glu Ser Gln Gly Ser Ala Glu Leu
 1250 1255 1260
 Ala Lys Lys Leu Lys Asn Thr Leu Leu Ser Leu Asp Ser Gly Glu Ser
 1265 1270 1275 1280

Met Ser Phe Ser Arg Ser Tyr Gly Gly Gly Val Ser Thr Val Phe Val
1285 1290 1295

Pro Thr Leu Ser Lys Lys Val Pro Val Pro Val Ile Pro Gly Ala Gly
1300 1305 1310

Ile Thr Leu Asp Arg Ala Tyr Asn Leu Ser Phe Ser Arg Thr Ser Gly
1315 1320 1325

Gly Leu Asn Val Ser Phe Gly Arg Asp Gly Gly Val Ser Gly Asn Ile
1330 1335 1340

Met Val Ala Thr Gly His Asp Val Met Pro Tyr Met Thr Gly Lys Lys
1345 1350 1355 1360

Thr Ser Ala Gly Asn Ala Ser Asp Trp Leu Ser Ala Lys His Lys Ile
1365 1370 1375

Ser Pro Asp Leu Arg Ile Gly Ala Ala Val Ser Gly Thr Leu Gln Gly
1380 1385 1390

Thr Leu Gln Asn Ser Leu Lys Phe Lys Leu Thr Glu Asp Glu Leu Pro
1395 1400 1405

Gly Phe Ile His Gly Leu Thr His Gly Thr Leu Thr Pro Ala Glu Leu
1410 1415 1420

Leu Gln Lys Gly Ile Glu His Gln Met Lys Gln Gly Ser Lys Leu Thr
1425 1430 1435 1440

Phe Ser Val Asp Thr Ser Ala Asn Leu Asp Leu Arg Ala Gly Ile Asn
1445 1450 1455

Leu Asn Glu Asp Gly Ser Lys Pro Asn Gly Val Thr Ala Arg Val Ser
1460 1465 1470

Ala Gly Leu Ser Ala Ser Ala Asn Leu Ala Ala Gly Ser Arg Glu Arg
1475 1480 1485

Ser Thr Thr Ser Gly Gln Phe Gly Ser Thr Thr Ser Ala Ser Asn Asn
1490 1495 1500

Arg Pro Thr Phe Leu Asn Gly Val Gly Ala Gly Ala Asn Leu Thr Ala
1505 1510 1515 1520

Ala Leu Gly Val Ala His Ser Ser Thr His Glu Gly Lys Pro Val Gly
1525 1530 1535

| | | | |
|-----------------------------------------------------------------|------|------|------|
| Ile Phe Pro Ala Phe Thr Ser Thr Asn Val Ser Ala Ala Leu Ala Leu | 1540 | 1545 | 1550 |
| Asp Asn Arg Thr Ser Gln Ser Ile Ser Leu Glu Leu Lys Arg Ala Glu | 1555 | 1560 | 1565 |
| Pro Val Thr Ser Asn Asp Ile Ser Glu Leu Thr Ser Thr Leu Gly Lys | 1570 | 1575 | 1580 |
| His Phe Lys Asp Ser Ala Thr Thr Lys Met Leu Ala Ala Leu Lys Glu | 1585 | 1590 | 1595 |
| Leu Asp Asp Ala Lys Pro Ala Glu Gln Leu His Ile Leu Gln Gln His | 1605 | 1610 | 1615 |
| Phe Ser Ala Lys Asp Val Val Gly Asp Glu Arg Tyr Glu Ala Val Arg | 1620 | 1625 | 1630 |
| Asn Leu Lys Lys Leu Val Ile Arg Gln Gln Ala Ala Asp Ser His Ser | 1635 | 1640 | 1645 |
| Met Glu Leu Gly Ser Ala Ser His Ser Thr Thr Tyr Asn Asn Leu Ser | 1650 | 1655 | 1660 |
| Arg Ile Asn Asn Asp Gly Ile Val Glu Leu Leu His Lys His Phe Asp | 1665 | 1670 | 1675 |
| Ala Ala Leu Pro Ala Ser Ser Ala Lys Arg Leu Gly Glu Met Met Asn | 1685 | 1690 | 1695 |
| Asn Asp Pro Ala Leu Lys Asp Ile Ile Lys Gln Leu Gln Ser Thr Pro | 1700 | 1705 | 1710 |
| Phe Ser Ser Ala Ser Val Ser Met Glu Leu Lys Asp Gly Leu Arg Glu | 1715 | 1720 | 1725 |
| Gln Thr Glu Lys Ala Ile Leu Asp Gly Lys Val Gly Arg Glu Glu Val | 1730 | 1735 | 1740 |
| Gly Val Leu Phe Gln Asp Arg Asn Asn Leu Arg Val Lys Ser Val Ser | 1745 | 1750 | 1755 |
| Val Ser Gln Ser Val Ser Lys Ser Glu Gly Phe Asn Thr Pro Ala Leu | 1765 | 1770 | 1775 |
| Leu Leu Gly Thr Ser Asn Ser Ala Ala Met Ser Met Glu Arg Asn Ile | 1780 | 1785 | 1790 |

Gly Thr Ile Asn Phe Lys Tyr Gly Gln Asp Gln Asn Thr Pro Arg Arg
 1795 1800 1805

Phe Thr Leu Glu Gly Gly Ile Ala Gln Ala Asn Pro Gln Val Ala Ser
 1810 1815 1820

Ala Leu Thr Asp Leu Lys Lys Glu Gly Leu Glu Met Lys Ser
 1825 1830 1835

<210> 9
 <211> 420
 <212> DNA
 <213> Erwinia amylovora

<400> 9
 atgacatcgt cacagcagcg ggttgaaagg tttttacagt atttctccgc cgggtgtaaa 60
 acgcccatac atctgaaaga cggggtgtgc gccctgtata acgaacaaga tgaggaggcg 120
 gcggtgctgg aagtaccgca acacagcgac agcctgttac tacactgccg aatcattgag 180
 gctgaccac aaacttcaat aaccctgtat tcgatgctat tacagctgaa ttttgaaatg 240
 gcggccatgc gcggctgttg gctggcgctg gatgaactgc acaacgtgcg tttatgtttt 300
 cagcagtcgc tggagcatct ggatgaagca agtttttagcg atatcgttag cggcttcac 360
 gaacatgcgg cagaagtgcg tgagtatata gcgcaattag acgagagtag cgcggcataa 420

<210> 10
 <211> 139
 <212> PRT
 <213> Erwinia amylovora

<400> 10
 Met Thr Ser Ser Gln Gln Arg Val Glu Arg Phe Leu Gln Tyr Phe Ser
 1 5 10 15

Ala Gly Cys Lys Thr Pro Ile His Leu Lys Asp Gly Val Cys Ala Leu
 20 25 30

Tyr Asn Glu Gln Asp Glu Glu Ala Ala Val Leu Glu Val Pro Gln His
 35 40 45

Ser Asp Ser Leu Leu Leu His Cys Arg Ile Ile Glu Ala Asp Pro Gln
 50 55 60

Thr Ser Ile Thr Leu Tyr Ser Met Leu Leu Gln Leu Asn Phe Glu Met
 65 70 75 80

Ala Ala Met Arg Gly Cys Trp Leu Ala Leu Asp Glu Leu His Asn Val
 85 90 95

Arg Leu Cys Phe Gln Gln Ser Leu Glu His Leu Asp Glu Ala Ser Phe
 100 105 110

Ser Asp Ile Val Ser Gly Phe Ile Glu His Ala Ala Glu Val Arg Glu
 115 120 125

Tyr Ile Ala Gln Leu Asp Glu Ser Ser Ala Ala
 130 135

<210> 11

<211> 341

<212> PRT

<213> Pseudomonas syringae

<400> 11

Met Gln Ser Leu Ser Leu Asn Ser Ser Ser Leu Gln Thr Pro Ala Met
 1 5 10 15

Ala Leu Val Leu Val Arg Pro Glu Ala Glu Thr Thr Gly Ser Thr Ser
 20 25 30

Ser Lys Ala Leu Gln Glu Val Val Val Lys Leu Ala Glu Glu Leu Met
 35 40 45

Arg Asn Gly Gln Leu Asp Asp Ser Ser Pro Leu Gly Lys Leu Leu Ala
 50 55 60

Lys Ser Met Ala Ala Asp Gly Lys Ala Gly Gly Gly Ile Glu Asp Val
 65 70 75 80

Ile Ala Ala Leu Asp Lys Leu Ile His Glu Lys Leu Gly Asp Asn Phe
 85 90 95

Gly Ala Ser Ala Asp Ser Ala Ser Gly Thr Gly Gln Gln Asp Leu Met
 100 105 110

Thr Gln Val Leu Asn Gly Leu Ala Lys Ser Met Leu Asp Asp Leu Leu
 115 120 125

Thr Lys Gln Asp Gly Gly Thr Ser Phe Ser Glu Asp Asp Met Pro Met
 130 135 140

Leu Asn Lys Ile Ala Gln Phe Met Asp Asp Asn Pro Ala Gln Phe Pro
 145 150 155 160

Lys Pro Asp Ser Gly Ser Trp Val Asn Glu Leu Lys Glu Asp Asn Phe

09679248 061301

| | | | | | |
|-----------------------------------------------------------------|-----|--|-----|--|-----|
| | 165 | | 170 | | 175 |
| Leu Asp Gly Asp Glu Thr Ala Ala Phe Arg Ser Ala Leu Asp Ile Ile | | | | | |
| | 180 | | 185 | | 190 |
| Gly Gln Gln Leu Gly Asn Gln Gln Ser Asp Ala Gly Ser Leu Ala Gly | | | | | |
| | 195 | | 200 | | 205 |
| Thr Gly Gly Gly Leu Gly Thr Pro Ser Ser Phe Ser Asn Asn Ser Ser | | | | | |
| | 210 | | 215 | | 220 |
| Val Met Gly Asp Pro Leu Ile Asp Ala Asn Thr Gly Pro Gly Asp Ser | | | | | |
| | 225 | | 230 | | 235 |
| | | | | | 240 |
| Gly Asn Thr Arg Gly Glu Ala Gly Gln Leu Ile Gly Glu Leu Ile Asp | | | | | |
| | 245 | | 250 | | 255 |
| Arg Gly Leu Gln Ser Val Leu Ala Gly Gly Gly Leu Gly Thr Pro Val | | | | | |
| | 260 | | 265 | | 270 |
| Asn Thr Pro Gln Thr Gly Thr Ser Ala Asn Gly Gly Gln Ser Ala Gln | | | | | |
| | 275 | | 280 | | 285 |
| Asp Leu Asp Gln Leu Leu Gly Gly Leu Leu Leu Lys Gly Leu Glu Ala | | | | | |
| | 290 | | 295 | | 300 |
| Thr Leu Lys Asp Ala Gly Gln Thr Gly Thr Asp Val Gln Ser Ser Ala | | | | | |
| | 305 | | 310 | | 315 |
| | | | | | 320 |
| Ala Gln Ile Ala Thr Leu Leu Val Ser Thr Leu Leu Gln Gly Thr Arg | | | | | |
| | 325 | | 330 | | 335 |
| Asn Gln Ala Ala Ala | | | | | |
| | 340 | | | | |

<210> 12
 <211> 1026
 <212> DNA
 <213> Pseudomonas syringae

<400> 12
 atgcagagtc tcagtcttaa cagcagctcg ctgcaaacc cggcaatggc ccttgctctg 60
 gtacgtcctg aagccgagac gactggcagt acgtcgagca aggcgcttca ggaagtgtgc 120
 gtgaagctgg ccgaggaact gatgcaat ggtcaactcg acgacagctc gccattggga 180
 aaactgttgg ccaagtcgat ggccgcagat ggcaaggcgg gcggcggtat tgaggatgtc 240
 atcgctgcgc tggacaagct gatccatgaa aagctcgggtg acaacttcgg cgcgtctgcg 300
 gacagcgctt cgggtaccgg acagcaggac ctgatgactc aggtgctcaa tggcctggcc 360

```

aagtcgatgc tcgatgatct tctgaccaag caggatggcg ggacaagctt ctccgaagac 420
gatatgccga tgctgaacaa gatcgcgagc ttcattggatg acaatccgc acagtttccc 480
aagccggact cgggctcctg ggtgaacgaa ctcaaggaag acaacttcct tgatggcgac 540
gaaacggctg cgttcggtc ggcaactcgac atcattggcc agcaactggg taatcagcag 600
agtgcgctg gcagtcctggc agggacgggt ggaggtctgg gcaactccgag cagtttttcc 660
aacaactcgt ccgtgatggg tgatccgctg atcgacgcca ataccggtcc cgggtgacagc 720
ggcaataccc gtggtgaagc ggggcaactg atcggcgagc ttatcgaccg tggcctgcaa 780
tcggtattgg ccggtggtgg actgggcaca cccgtaaaca ccccgagac cgggtacgtcg 840
gcgaatggcg gacagtcgac tcaggatctt gatcagttgc tgggcggtt gctgctcaag 900
ggcctggagg caacgctcaa ggatgccggg caaacaggca ccgacgtgca gtcgagcgct 960
gcgcaaatcg ccaccttgct ggtcagtagc ctgctgcaag gcacccgcaa tcaggctgca 1020
gcctga                                           1026

```

<210> 13

<211> 1729

<212> DNA

<213> *Pseudomonas syringae*

<400> 13

```

tccacttcgc tgattttgaa attggcagat tcatagaaac gttcaggtgt ggaaatcagg 60
ctgagtgcgc agatttcggt gataaggggt tggtagctgt cattgttggc catttcaagg 120
cctctgagtg cgggtgcggag caataaccagt ctccctgctg gcgtgtgcac actgagtcgc 180
aggcataggc atttcagttc cttgctgttg ttgggcatat aaaaaaagga acttttaaaa 240
acagtgcaat gagatgccgg caaacgggga accggtcgct gcgctttgcc actcacttcg 300
agcaagctca accccaaaca tccacatccc tatcgaacgg acagcgatac ggccacttgc 360
tctggtaaac cctggagctg gcgtcggtcc aattgccac ttagcgaggt aacgcagcat 420
gagcatcggc atcacacccc ggccgcaaca gaccaccacg ccaactcgatt tttcggcgct 480
aagcggcaag agtcctcaac caaacacgtt cggcgagcag aacactcagc aagcgatcga 540
cccagtgca ctgttggtcg gcagcgacac acagaaagac gtcaacttcg gcacgcccga 600
cagcaccgtc cagaatccgc aggacgccag caagcccaac gacagccagt ccaacatcgc 660
taaattgatc agtgcattga tcatgtcggt gctgcagatg ctaccaact ccaataaaaa 720
gcaggacacc aatcaggaac agcctgatag ccaggctcct ttccagaaca acggcgggct 780
cggtagaccg tcggccgata gcggggggcg cggtagaccg gatgcgacag gtggcggcg 840
cggtagatcg ccaagcgcaa caggcgggtg cggcgggtgat actccgaccg caacaggcg 900
tggcggcagc ggtggcgggc gcacacccac tgcaacaggt ggcggcagcg gtggcacacc 960
cactgcaaca ggcggtggcg aggggtggcg aacaccgcaa atcactccgc agttggccaa 1020
ccctaaccgt acctcaggtg ctggctcggt gtcggacacc gcaggttcta ccgagcaagc 1080
cggcaagatc aatgtggtga aagacaccat caaggtcggc gctggcgaag tctttgacgg 1140
ccacggcgca accttactg ccgacaaatc tatgggtaac ggagaccagg gcgaaaatca 1200
gaagcccattg ttcgagctgg ctgaaggcgc tacgttgaag aatgtgaacc tgggtgagaa 1260
cgaggtcgat ggcattccacg tgaaagccaa aaacgctcag gaagtcacca ttgacaacgt 1320
gcatgccagc aacgtcgggtg aagacctgat tacggtcaaa ggcgaggagg gcgcagcggt 1380
cactaatctg aacatcaaga acagcagtg ccaaaggtgca gacgacaagg ttgtccagct 1440
caacgccaac actcacttga aaatcgacaa cttcaaggcc gacgatttcg gcacgatgg 1500
tcgcaccaac ggtggcaagc agtttgatga catgagcatc gagctgaacg gcacgaagc 1560
taaccacggc aagttcgccc tggtgaaaag cgacagtgac gatctgaagc tggcaacggg 1620
caacatcgcc atgaccgacg tcaaacacgc ctacgataaa acccaggcat cgaccaaca 1680

```

caccgagctt tgaatccaga caagtagctt gaaaaaagg ggtggactc

1729

<210> 14

<211> 424

<212> PRT

<213> Pseudomonas syringae

<400> 14

Met Ser Ile Gly Ile Thr Pro Arg Pro Gln Gln Thr Thr Thr Pro Leu
1 5 10 15

Asp Phe Ser Ala Leu Ser Gly Lys Ser Pro Gln Pro Asn Thr Phe Gly
20 25 30

Glu Gln Asn Thr Gln Gln Ala Ile Asp Pro Ser Ala Leu Leu Phe Gly
35 40 45

Ser Asp Thr Gln Lys Asp Val Asn Phe Gly Thr Pro Asp Ser Thr Val
50 55 60

Gln Asn Pro Gln Asp Ala Ser Lys Pro Asn Asp Ser Gln Ser Asn Ile
65 70 75 80

Ala Lys Leu Ile Ser Ala Leu Ile Met Ser Leu Leu Gln Met Leu Thr
85 90 95

Asn Ser Asn Lys Lys Gln Asp Thr Asn Gln Glu Gln Pro Asp Ser Gln
100 105 110

Ala Pro Phe Gln Asn Asn Gly Gly Leu Gly Thr Pro Ser Ala Asp Ser
115 120 125

Gly Gly Gly Gly Thr Pro Asp Ala Thr Gly Gly Gly Gly Gly Asp Thr
130 135 140

Pro Ser Ala Thr Gly Gly Gly Gly Gly Asp Thr Pro Thr Ala Thr Gly
145 150 155 160

Gly Gly Gly Ser Gly Gly Gly Gly Thr Pro Thr Ala Thr Gly Gly Gly
165 170 175

Ser Gly Gly Thr Pro Thr Ala Thr Gly Gly Gly Glu Gly Gly Val Thr
180 185 190

Pro Gln Ile Thr Pro Gln Leu Ala Asn Pro Asn Arg Thr Ser Gly Thr
195 200 205

09879248.061201

00079248-061201
F02T90" 84262860

Gly Ser Val Ser Asp Thr Ala Gly Ser Thr Glu Gln Ala Gly Lys Ile
210 215 220

Asn Val Val Lys Asp Thr Ile Lys Val Gly Ala Gly Glu Val Phe Asp
225 230 235 240

Gly His Gly Ala Thr Phe Thr Ala Asp Lys Ser Met Gly Asn Gly Asp
245 250 255

Gln Gly Glu Asn Gln Lys Pro Met Phe Glu Leu Ala Glu Gly Ala Thr
260 265 270

Leu Lys Asn Val Asn Leu Gly Glu Asn Glu Val Asp Gly Ile His Val
275 280 285

Lys Ala Lys Asn Ala Gln Glu Val Thr Ile Asp Asn Val His Ala Gln
290 295 300

Asn Val Gly Glu Asp Leu Ile Thr Val Lys Gly Glu Gly Gly Ala Ala
305 310 315 320

Val Thr Asn Leu Asn Ile Lys Asn Ser Ser Ala Lys Gly Ala Asp Asp
325 330 335

Lys Val Val Gln Leu Asn Ala Asn Thr His Leu Lys Ile Asp Asn Phe
340 345 350

Lys Ala Asp Asp Phe Gly Thr Met Val Arg Thr Asn Gly Gly Lys Gln
355 360 365

Phe Asp Asp Met Ser Ile Glu Leu Asn Gly Ile Glu Ala Asn His Gly
370 375 380

Lys Phe Ala Leu Val Lys Ser Asp Ser Asp Asp Leu Lys Leu Ala Thr
385 390 395 400

Gly Asn Ile Ala Met Thr Asp Val Lys His Ala Tyr Asp Lys Thr Gln
405 410 415

Ala Ser Thr Gln His Thr Glu Leu
420

<210> 15

<211> 344

<212> PRT

<213> Pseudomonas solanacearum

09879248-061201
FOI 90-84262860

<400> 15

Met Ser Val Gly Asn Ile Gln Ser Pro Ser Asn Leu Pro Gly Leu Gln
1 5 10 15

Asn Leu Asn Leu Asn Thr Asn Thr Asn Ser Gln Gln Ser Gly Gln Ser
20 25 30

Val Gln Asp Leu Ile Lys Gln Val Glu Lys Asp Ile Leu Asn Ile Ile
35 40 45

Ala Ala Leu Val Gln Lys Ala Ala Gln Ser Ala Gly Gly Asn Thr Gly
50 55 60

Asn Thr Gly Asn Ala Pro Ala Lys Asp Gly Asn Ala Asn Ala Gly Ala
65 70 75 80

Asn Asp Pro Ser Lys Asn Asp Pro Ser Lys Ser Gln Ala Pro Gln Ser
85 90 95

Ala Asn Lys Thr Gly Asn Val Asp Asp Ala Asn Asn Gln Asp Pro Met
100 105 110

Gln Ala Leu Met Gln Leu Leu Glu Asp Leu Val Lys Leu Leu Lys Ala
115 120 125

Ala Leu His Met Gln Gln Pro Gly Gly Asn Asp Lys Gly Asn Gly Val
130 135 140

Gly Gly Ala Asn Gly Ala Lys Gly Ala Gly Gly Gln Gly Gly Leu Ala
145 150 155 160

Glu Ala Leu Gln Glu Ile Glu Gln Ile Leu Ala Gln Leu Gly Gly Gly
165 170 175

Gly Ala Gly Ala Gly Gly Ala Gly Gly Gly Val Gly Gly Ala Gly Gly
180 185 190

Ala Asp Gly Gly Ser Gly Ala Gly Gly Ala Gly Gly Ala Asn Gly Ala
195 200 205

Asp Gly Gly Asn Gly Val Asn Gly Asn Gln Ala Asn Gly Pro Gln Asn
210 215 220

Ala Gly Asp Val Asn Gly Ala Asn Gly Ala Asp Asp Gly Ser Glu Asp
225 230 235 240

Gln Gly Gly Leu Thr Gly Val Leu Gln Lys Leu Met Lys Ile Leu Asn
245 250 255

Ala Leu Val Gln Met Met Gln Gln Gly Gly Leu Gly Gly Gly Asn Gln
260 265 270

Ala Gln Gly Gly Ser Lys Gly Ala Gly Asn Ala Ser Pro Ala Ser Gly
275 280 285

Ala Asn Pro Gly Ala Asn Gln Pro Gly Ser Ala Asp Asp Gln Ser Ser
290 295 300

Gly Gln Asn Asn Leu Gln Ser Gln Ile Met Asp Val Val Lys Glu Val
305 310 315 320

Val Gln Ile Leu Gln Gln Met Leu Ala Ala Gln Asn Gly Gly Ser Gln
325 330 335

Gln Ser Thr Ser Thr Gln Pro Met
340

<210> 16

<211> 1035

<212> DNA

<213> Pseudomonas solanacearum

<400> 16

atgtcagtcg gaaacatcca gagcccgtcg aacctcccgg gtctgcagaa cctgaacctc 60
aacaccaaca ccaacagcca gcaatcgggc cagtccgtgc aagacctgat caagcaggtc 120
gagaaggaca tctcaacat catcgcagcc ctctgtcaga aggccgcaca gtcggcgggc 180
ggcaacaccg gtaacaccgg caacgcgcgg gcgaaggacg gcaatgcaa cgcggggcgcc 240
aacgacccga gcaagaacga cccgagcaag agccaggctc cgcagtcggc caacaagacc 300
ggcaacgctc acgacgcaa caaccaggat ccgatgcaag cgctgatgca gctgctggaa 360
gacctggtga agctgctgaa ggcgccctg cacatgcagc agcccggcgg caatgacaag 420
ggcaacggcg tggcggtgc caacggcgcc aagggtgccg gcggccaggc cggcctggcc 480
gaagcgctgc aggagatcga gcagatcctc gccagctcg gcggcggcgg tgctggcgcc 540
ggcgcgcgcg gtggcggtgt cggcggtgct ggtggcgcg atggcggtc cgggtcgggg 600
ggcgcgaggc gtgcgaacgg cgccgacggc ggcaatggcg tgaacggcaa ccaggcgaac 660
ggccccgaga acgagggcga tgtcaacggg gccaacggcg cggatgacgg cagcgaagac 720
cagggcggcc tcaccggcgt gctgcaaaag ctgatgaaga tctgaacgc gctggtgcag 780
atgatgcagc aaggcgccct cggcgggcgg aaccaggcgc agggcggtc gaagggtgcc 840
ggcaacgcct cgccggcttc cggcgcgaa cggggcgcg accagcccgg ttcggcggat 900
gatcaatcgt ccggccagaa caatctgcaa tccagatca tggatgtggt gaaggaggtc 960
gtccagatcc tgcagcagat gctggcgggc cagaacggcg gcagccagca gtccacctc 1020
acgcagccga tgtaa 1035

<210> 17

<211> 10

<212> PRT

<213> Xanthomonas campestris

<400> 17

Met Asp Gly Ile Gly Asn His Phe Ser Asn

1 5 10

<210> 18

<211> 20

<212> PRT

<213> Xanthomonas campestris pv. pelargonii

<400> 18

Ser Ser Gln Gln Ser Pro Ser Ala Gly Ser Glu Gln Gln Leu Asp Gln

1 5 10 15

Leu Leu Ala Met

20

00879248.DEL201
T02T90" 84264860